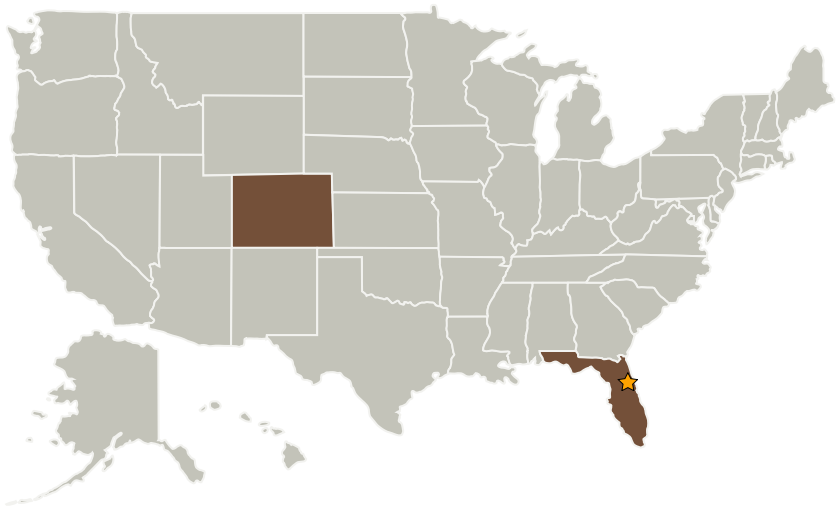
Lunar Sulfur Capture System, Phase I

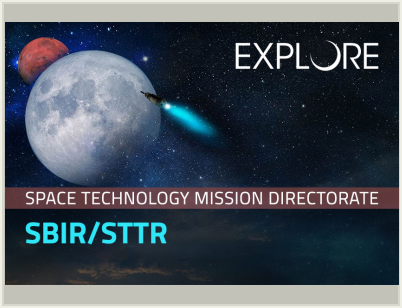
Completed Technology Project (2008 - 2008)

Project Introduction

The Lunar Sulfur Capture System (LSCS) is an innovative method to recover sulfur compounds from lunar soil using sorbents derived primarily from in-situ resources. Most of the sulfur released from lunar soil during higher-temperature thermal treatment is trapped by the LSCS at lower temperatures on iron oxides present in lunar soil. As needed, small amounts of polishing sorbents are used to reduce equilibrium sulfur concentrations to the low ppm level. After sorbents become saturated, sulfur compounds are desorbed and converted to useful sulfur products. Sulfur is present in concentrations of about 0.1 percent in lunar soils and can be recovered by the LSCS as a useful product from in-situ resource utilization (ISRU). The LSCS can capture and recover sulfur from lunar soil as a primary product during thermal desorption of volatile compounds or during thermal reduction ISRU processes used for oxygen production. Removal of sulfur compounds is required during ISRU to prevent electrolyzer damage, catalyst poisoning, and equipment corrosion. The LSCS is applicable to thermal ISRU reduction processes in which sulfur is released in forms such as hydrogen sulfide (H2S), carbonyl sulfide (COS), or carbon disulfide (CS2).

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Kennedy Space Center (KSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Kennedy Space Center(KSC)	Lead Organization	NASA Center	Kennedy Space Center, Florida
Pioneer Astronautics	Supporting Organization	Industry Historically Underutilized Business Zones (HUBZones)	Lakewood, Colorado

Primary U.S. Work Locations	
Colorado	Florida

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Mark Berggren

Technology Areas

Primary:

- TX07 Exploration Destination Systems
  - TX07.1 In-Situ Resource Utilization
    - TX07.1.2 Resource Acquisition, Isolation, and Preparation